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10/046,032	10/23/2001	Joseph Wang	37000cip9720	3372

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EXAMINER	
NOGUEROLA, ALEXANDER STEPHAN	
ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/046,032	WANG ET AL.	
	Examiner	Art Unit	
	ALEX NOGUEROLA	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,7-9,11-20,22-24 and 26-48* is/are rejected.

7)☒ Claim(s) *3-6,10,21 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/01/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the JPO computer translation of Ikariyama et al. (JP 09-094231 A), hereafter "Ikariyama," in view of Yamaguchi et al. (US 5,071,537), hereafter "Yamaguchi."

Addressing claim 1, Ikariyama teaches an apparatus for producing a signal related to the concentration of glucose and insulin (abstract), the apparatus comprising

a first conductive composite (9) comprising glucose oxidase and a metal posited within a first cylindrical tube (10) (See paragraphs [0007] and [0011] of "Detailed Description" and paragraph [0007] of "Means");

a second conductive composite (4) comprising a metal posited with a second cylindrical tube (10);

a sleeve (6 or 7) containing the first cylindrical tube and the second cylindrical tube;

a first electrical contact within the first cylindrical tube (2) in contact with the first conductive composite; and

a second electrical contact (4) within the second cylindrical tube in contact with the second conductive composite (it is not clear whether the second electric contact is the same as the second composite, but a second electrical contact is clearly shown in Drawing 1).

The second conductive composite in Ikariyama does not comprise a metal oxide, but Ag/AgCl (paragraphs [0007] of "detailed Description").

Yamaguchi teaches a reference electrode comprising a composite made of silver halide and silver oxide (abstract). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the reference electrode and thus the composite of Yamaguchi in the invention of Ikariyama because as taught by Yamaguchi the reference electrode is miniature, has a long-life, "is capable of operating stably for an extended period of time in a biological system or circulating circuit system," and "can be used safely in vivo or in a body fluid and stably, for an extended period of time, in vivo or in a circulating circuit, and which will not respond to the pH of a specimen or be influenced by a temperature" (abstract; col. 1, ll. 9-11; and col. 1, ll. 54-63).

Addressing claim 7, Ikariyama teaches a microelectrode diameter range of 1 micrometer to 500 micrometers (paragraph [0007] of the "Detailed Description").

5. Claims 11-20, 22-24, 26-28, and 34-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over the JPO computer translation of Ikariyama et al. (JP 09-094231 A), hereafter "Ikariyama," in view of the Derwent abstract of Yazaki (JP 04-326054 A), hereafter "Yazaki," and Zawodzinski et al. (US 5,227,042), hereafter "Zawodzinski."

Addressing claim 11, Ikariyama teaches an apparatus for producing signal related to the concentration of a substance (abstract) comprising

a conductive composition comprising an oxygen-dependent enzyme (See paragraphs [0007] and [0011] of "Detailed Description" and paragraph [0007] of "Means");

a sleeve (10) with a first end and a second end;

a cavity disposed within the first end of the sleeve, the cavity containing the composite (Drawing 1) and forming an electrode end of the composite at the first end of the sleeve (Drawing 1); and

an electrical contact disposed within the second end of the sleeve extending into the cavity (Drawing 1).

Ikariyama does not mention (a) including in the conductive composite sufficient oxygen-rich binder to support an oxygen-dependent enzymatic reaction in the absence of exogenous oxygen, (b) that the length of the sleeve is at least about 0.2 mm, and (c) that the ratio of the surface area of the electrode end of the composite to the volume of the composite is at least about 1:8.

As for including in the conductive composite sufficient oxygen-rich binder to support an oxygen-dependent enzymatic reaction in the absence of exogenous oxygen, Yazakai and Zawodzinski teach an electrode for measuring glucose concentration comprising a composite including glucose oxidase and an oxygen-rich binder (in Yazaki see the abstract and in Zawodzinski see the abstract and claim 7). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use a composite having an oxygen-rich binder as taught by Yazakai or Zawodzinski in the invention of Ikariyama because as taught by Yazakai and Zawodzinski the glucose measurements will be independent of the oxygen concentration

(see the abstracts of Yazakai and Zawodzinski), which, without such a binder, would otherwise affect the accuracy of the measurements, after all, the enzymatic reaction is oxygen-dependent.

As for having the length of the sleeve being at least 0.2 mm, barring evidence to the contrary, such as unexpected results, the length of the sleeve, or more generally the dimensions of the apparatus, is just a matter of scaling the apparatus to the expected sample volume and a practical size for the intended environment. Since the apparatus of Ikariyama includes a micro needle for injection into skin it should be small, but large enough to be easily handled for injecting and removing the microneedle and for making appropriate electrical connections.

As for the ratio of the surface area of the electrode end of the composite to the volume of the composite being at least about 1:8, as with the length of the sleeve being at least 0.2 mm, this limitation is just a matter of scaling the size of the apparatus or just optimization. The sleeve in Ikariyama has a significantly large ratio of length to diameter (Drawing 1) and Zawodzinski teaches determining the optimum ratio and amounts of components in the conductive composite (col. 5, ll. 24-61), so barring evidence to the contrary, such as unexpected results, having the volume of the composite be at least eight times the surface area of the electrode is just a matter of providing enough composite ingredients for adequate or optimum measurement of the substance concentration.

Addressing claim 12, the conductive composite in Ikariyama as modified by Zawodzinski comprises platinum powder (in Ikariyama see paragraphs [0007] and [0011] of "Detailed Description" and paragraph [0007] of "Means" and in Zawodzinski see claim 7. Note that

Yazakai may also disclose a metal powder in the composite; however, a full translation of the patent is not currently available to the examiner).

Addressing claim 13, both Yazakai and Zawodzinski teach carbon powder in the composite.

Addressing claim 14, Zawodzinski teaches C/Pt particles (col. 5, ll. 24-41).

Addressing claim 15, Zawodzinski teaches that rhodium or ruthenium may also be used instead of Pt in the C/Pt particles (claim 2).

Addressing claims 16 and 17, the sleeve (10) comprises Teflon ("Description of the drawings" in Ikariyama).

Addressing claims 18 and 19, Ikariyama discloses a diameter range for the cavity of 1 micrometer to 500 micrometers, which overlaps Applicant's claimed range (paragraph [0007] in the "Detailed Description"). In any event, as discussed in the rejection of claim 11, barring evidence to the contrary, such as unexpected results, selecting the dimensions of the apparatus, such as a cavity diameter of 2.0 mm, is just a matter of scaling the apparatus for the sample volume or easy handling or optimization.

Addressing claim 20, both Yazakai and Zawodzinski disclose using a perfluorchemical as the oxygen-rich binder (see the abstracts).

Addressing claims 22 and 23, Ikariyama, Yazakai, and Zawodzinski disclose glucose oxidase (see the abstracts in Ikariyama and Yazakai and claim 7 in Zawodzinski).

Addressing claims 24, 26 and 27, Ikariyama discloses a Nafion (which is a persulfonate) membrane (paragraphs [0012] and [0016] in the 'Detailed Description").

Addressing claim 28, Ikariyama teaches including a microneedle in the apparatus (abstract).

Addressing claim 34, Ikariyama teaches a method of detecting substrate concentration of an environment using a composite sensor (abstract), the method comprising the following steps:

a) providing a biosensor comprising a conductive composition comprising an oxygen-dependent enzyme (See paragraphs [0007] and [0011] of "Detailed Description" and paragraph [0007] of "Means"), a reservoir (10) containing the composite (Drawing 1), an electrode end of the composite (Drawing 1);

b) placing the biosensor in the environment ("Effect of the Invention"); and

c) detecting the substrate concentration ("Effect of the Invention").

Ikariyama does not mention (a) including in the conductive composite sufficient oxygen-rich binder to support an oxygen-dependent enzymatic reaction in the absence of exogenous

oxygen, and (b) that the ratio of the surface area of the electrode end of the composite to the volume of the composite is at least about 1:8.

As for including in the conductive composite sufficient oxygen-rich binder to support an oxygen-dependent enzymatic reaction in the absence of exogenous oxygen, Yazakai and Zawodzinski teach an electrode for measuring glucose concentration comprising a composite including glucose oxidase and an oxygen-rich binder (in Yazaki see the abstract and in Zawodzinski see the abstract and claim 7). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use a composite having an oxygen-rich binder as taught by Yazakai or Zawodzinski in the invention of Ikariyama because as taught by Yazakai and Zawodzinski the glucose measurements will be independent of the oxygen concentration (see the abstracts of Yazakai and Zawodzinski), which, without such a binder, would otherwise affect the accuracy of the measurements, after all, the enzymatic reaction is oxygen-dependent.

As for the ratio of the surface area of the electrode end of the composite to the volume of the composite being at least about 1:8 this limitation is just a matter of scaling the size of the apparatus or just optimization. More generally, selecting the dimensions of the apparatus, is just a matter of scaling the apparatus to the expected sample volume and a practical size for the intended environment. Since the apparatus of Ikariyama includes a micro needle for injection into skin it should be small, but large enough to be easily handled for injecting and removing the microneedle and for making appropriate electrical connections. The sleeve in Ikariyama has a significantly large ratio of length to diameter (Drawing 1) and Zawodzinski teaches determining the optimum ratio and amounts of components in the conductive composite (col. 5, ll. 24-61), so barring evidence to the contrary, such as unexpected results, that having the volume of the

composite be at least eight times the surface area of the electrode is just a matter of providing enough composite ingredients for adequate or optimum measurement of the substance concentration.

Addressing claim 35, the conductive composite in Ikariyama as modified by Zawodzinski comprises platinum powder (in Ikariyama see paragraphs [0007] and [0011] of "Detailed Description" and paragraph [0007] of "Means" and in Zawodzinski see claim 7. Note that Yazakai may also disclose a metal powder in the composite; however, a full translation of the patent is not currently available to the examiner).

Addressing claim 36, both Yazakai and Zawodzinski teach carbon powder in the composite.

Addressing claim 37, Zawodzinski teaches C/Pt particles (col. 5, ll. 24-41).

Addressing claim 38, Zawodzinski teaches that rhodium or ruthenium may also be used instead of Pt in the C/Pt particles (claim 2).

Addressing claim 39, both Yazakai and Zawodzinski disclose using a perfluorchemical as the oxygen-rich binder (see the abstracts).

Addressing claim 40, Ikariyama discloses a diameter range for the cavity of

1 micrometer to 500 micrometers, which overlaps Applicant's claimed range (paragraph [0007] in the "Detailed Description"). In any event, as discussed in the rejection of claim 34, barring evidence to the contrary, such as unexpected results, selecting the dimensions of the apparatus, such as a cavity diameter of between approximately 0.2 mm and approximately 5.0 mm, is just a matter of scaling the apparatus for the sample volume or easy handling or optimization, especially for a microneedle sensor suitable for at least partial insertion into the skin of a patient.

Addressing claim 41, Ikariyama, Zawodzinski, and Yazaki all disclose glucose oxidase and an oxygen-rich binder (in Ikariyama see paragraph [0007] in the "Detailed Description," Yazaki see the abstract, and in Zawodzinski see the abstract and claim 7).

Addressing claim 42, Ikariyama teaches a sleeve (10) (Drawing 1).

Addressing claim 43, Ikariyama teaches inserting at least a portion of the sensor into he skin to draw a blood sample directly into the sensor ("Effect of the Invention").

Addressing claim 44, Ikariyama teaches making a measurement on a buffer solution ([Example 2] in the "detailed Description").

Addressing claim 45, Ikariyama as modified by Zawodzinski and Yazaki does not mention using the biosensor in an industrial environment; however, barring evidence to the contrary, such as unexpected results, although the primary use taught by Ikariyama is a clinical-

type setting one with ordinary skill in the art would have recognized that the biosensor of Ikariyama as modified by Zawodzinski and Yazaki is not so limited and can be used where glucose needs to be measured, especially where the samples are small or hard to access.

Addressing claim 46, detecting an inhibitor concentration is implied since "[g]enerally, the sensor response to a blood sample or a blood serum sample is the sum of the response toe h easy-oxidizable impurity contained in a sample solution, and the response toe eh measuring object matter" (paragraph [0011] of the 'Detailed Description").

Addressing claim 47, although detecting a substrate concentration within the claimed range is not specifically mentioned by Ikariyama as modified by Zawodzinski and Yazaki it would have been obvious to measure a substrate concentration within the claimed concentration range because the biosensor of Ikariyama is clearly intended for making small amounts of substrate concentration. Furthermore, the biosensor of Ikariyama as modified by Zawodzinski and Yazakiis capable of such detecting because it has a linear response within the claimed concentration range (abstract and Drawing 3 of Ikariyama).

Addressing claim 48, Ikariyama as modified by Zawodzinski and Yazaki all disclose detecting at least glucose concentration (see the abstract of Ikariyama, Zawodzinski (also see claim 7), and Yazaki).

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JPO computer translation of Ikariyama et al. (JP 09-094231 A), hereafter "Ikariyama," in view Yamaguchi et al. (US 5,071,537), hereafter "Yamaguchi," as applied to claim 1 above, and further in view of the Derwent abstract of Yazaki (JP 04-326054 A), hereafter "Yazaki," or El Murr et al. (US 5,272,087), hereafter "El Murr," or Zawodzinski et al. (US 5,227,042), hereafter "Zawodzinski," or Parellada et al. ("A new type of hydrophilic carbon paste electrodes for biosensor manufacturing: binder paste electrodes," *Biosensors & Bioelectronics* Vol. 12. No. 4, pp. 267-275, 1997), hereafter "Parellada."

The first conductive composite in Ikariyama comprises platinum powder, not carbon powder. However, at the time of the invention there were several electrodes for producing a signal related to the concentration of glucose that had conductive composites comprising glucose oxidase and carbon powder (see the abstracts of Yazaki, El Murr (and claims 4 and 8), Zawodzinski (and claim 7), and Parellada). Barring evidence to the contrary, such as unexpected results, the selecting a known composition comprising glucose oxidase and carbon powder is just a matter of optimizing the apparatus for measuring glucose concentration. For example, Yazaki teaches that with his composite the glucose measurements will be independent of oxygen concentration (abstract); El Murr teaches that "[t]he electrode of the invention is easy to prepare, at very low cost, it can keep easily, it is always ready for use and it is very easy to handle and provides reproducible results" (col. 2, ln. 66 – col. 3, ln. 1); Zawodzinski teaches that with his composite the glucose measurements will be independent of oxygen concentration (abstract); and Parellada teaches a half-life of more than 12 hours when operated continuous (abstract).

7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JPO computer translation of Ikariyama et al. (JP 09-094231 A), hereafter "Ikariyama," in view Yamaguchi et al. (US 5,071,537), hereafter "Yamaguchi," as applied to claim 1 above, and further in view of the Derwent abstract of Yazaki (JP 04-326054 A), hereafter "Yazaki," or Zawodzinski et al. (US 5,227,042), hereafter "Zawodzinski."

Addressing claim 8, Ikariyama does not mention including an oxygen-rich binder in the first conductive composite. Yazakai and Zawodzinski teach an electrode for measuring glucose concentration comprising a composite including glucose oxidase and an oxygen-rich binder (in Yazaki see the abstract and in Zawodzinski see the abstract and claim 7). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use a composite having an oxygen-rich binder as taught by Yazakai or Zawodzinski in the invention of Ikariyama because as taught by Yazakai and Zawodzinski the glucose measurements will be independent of the oxygen concentration (see the abstracts of Yazakai and Zawodzinski), which, without such a binder, would otherwise affect the accuracy of the measurements.

Addressing claim 9, both Yazakai and Zawodzinski disclose using a perfluorchemical as the oxygen-rich binder (see the abstracts).

8. Claims 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Derwent abstract of Yazaki (JP 04-326054 A), hereafter "Yazaki," in view of Gorski et al. ("Ruthenium catalyst for amperometric determination of insulin at physiological pH," *Journal of Electroanalytical Chemistry*, 425 (1997) 191-199), hereafter "Gorski," and Wong et al. (US 5,330,634), hereafter "Wong," or Ward et al. (US 5,711,861), hereafter "Ward."

Addressing claim 29, Yazaki teaches a method of detecting glucose in a liquid sample (abstract) the method comprising the following steps:

a) providing a first biosensor comprising glucose oxidase (abstract);

b) placing the first biosensor in the liquid sample (implied by the abstract, which teaches continuous measurement of concentration in a culture medium);

c) applying a detection potential to the first biosensor (implied by Figures 1 and 2, which show measured currents); and

d) detecting a biocatalytic signal at the first biosensor (Figures 1 and 2 and the abstract).

Yazaki does not mention simultaneously detecting insulin with a second biosensor while detecting glucose with the first biosensor (note that the examiner only has the English language abstract available and that the body of Applicant's claim 1 does not require detecting glucose or insulin).

Gorski teaches a method of detecting insulin in a liquid sample (abstract) the method comprising the following steps:

a) providing a second biosensor comprising metal oxidase (abstract);

b) placing the second biosensor in the liquid sample (abstract and *2.4 Measurements of chemical secretions from individual pancreatic β-cells* on page 193);

c) applying a detection potential to the first biosensor (*3.5 Single-cell measurements with RuOx microelectrode*); and

d) detecting a biocatalytic signal at the first biosensor (*3.5 Single-cell measurements with RuOx microelectrode*).

Ward and Wong each teach simultaneously measuring glucose with a glucose oxidase electrode sensor and at least one other analyte with another electrode sensor (see in Wong the abstract and col. 2, ll. 50-63 and in Ward see the abstract and col. 4, ll. 43-62). It would have been obvious to one with ordinary skill in the art at the time the invention was made to measure glucose, as taught by Yazaki, while measuring insulin, as taught by Gorski, because (a) as shown be Wong or Ward it was known at the time of the invention to simultaneously measure glucose and another analyte with electrode sensors, and (b) insulin is directly and closely related to glucose production so the correlation between a change in insulin concentration and the resulting change in glucose concentration can be instantaneously monitored if the glucose and insulin concentrations are simultaneously measured. This information would be useful, for example, in determining how much and at what rate insulin should be supplied for a desired glucose level to be reached in a specified time period or in understanding the metabolic production of glucose from insulin.

Addressing claim 30, amperometric detection is implied by at least Figures 1 and 2 of Yazaki, which show current measurements.

Addressing claim 31, Gorski discloses cyclic potentiometry (Figures 1 and 2).

Addressing claim 32, the sensor of Gorski comprises RuOx (abstract).

Addressing claim 33, the sensor of Yazaki comprises an oxygen-rich binder (abstract).

Allowable Subject Matter

9. Claims 3-6, 10, 21, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

a) Claim 3: the nonobvious limitation is the requirement in the combination of limitations that the metal comprise "at least one metal selected from the group consisting of rhodium, iridium, and ruthenium." In Ikariyama as modified by Yamaguchi, Yazaki, El Murr, Zawodzinski, and Parellada the metal is silver. There is no suggestion to substitute rhodium, iridium, or ruthenium, for silver, nor is there a reasonable expectation of the same success if such a substitution were to be made, since silver oxide is paired with silver chloride (claim 1 and col. 4,

ll. 42-52 of Yamaguchi);

b) Claim 4: the nonobvious limitation is the requirement in the combination of limitations that the sleeve comprises a conductor. In Ikariyama as modified by Yamaguchi, Yazaki, El Murr, Zawodzinski, and Parellada the sleeve (whether taken to be (6) or (7)) is made of glass ("description of Drawings");

c) Claim 5 depends from allowable claim 4;

d) Claim 6: the nonobvious limitation is the requirement in the combination of limitations that the metal oxide catalyst comprise "at least one member selected from the group consisting of RhO_x and IrO_x." In Ikariyama as modified by Yamaguchi, Yazaki, El Murr, Zawodzinski, and Parellada the metal oxide catalyst is silver oxide. There is no suggestion to substitute RhO_x and IrO_x for silver oxide, nor is there a reasonable expectation of the same success if such a substitution were to be made, since silver oxide is paired with silver chloride (claim 1 and col. 4, ll. 42-52 of Yamaguchi);

e) Claim 10: the nonobvious limitation is the requirement in the combination of limitations that the perfluorochemical comprise polychlorotrifluoroethylene. Yazaki discloses tetrafluoroethylene and Zawodzinski discloses perfluorosulfonic polymer;

f) Claim 21: the nonobvious limitation is the requirement in the combination of limitations that the perfluorochemical comprise polychlorotrifluoroethylene. Yazaki discloses tetrafluoroethylene and Zawodzinski discloses perfluorosulfonic polymer; and

g) Claim 25: the nonobvious limitation is the requirement that in the combination of limitations the membrane comprise "at least one compound selected from the group consisting of polyurethane, polycarbonate, polyethylene glycol, polyvinyl chloride and polyhydroethylmethacrylate." Ikariyama as modified by Yazaki and Zawodzinski only discloses persulfonate or polyvinyl pyrrolidone membrane

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alex Noguerola
Primary Examiner
AU 1753
June 14, 2004